THE MAC Flyer

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THE MAC Flyer

For Greater Safety in MAC Air Operations

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TMF Interview

Meet MAC's Inspector General

Brigadier General Paul A. Harvey discusses safety

Editor's Note: Brigadier General Paul A. Harvey became the MAC Inspector General on 1 March 1983. He previously served as the commander of the 436th Military Airlift Wing at Dover AFB, Delaware. We've asked General Harvey to share his thoughts on safety with you.

TMF: Would you tell us a little about your flying background?
IG: I was in the last T-28 class in the Air Force, and then went on to fly T-33s. Following that, I was sent to Travis to fly C-133s. While waiting to qualify in the C-133, I checked out in C-124s. I've got a little over 2,000 hours in the C-133. Then I went to C-141s. Later I went to Alaska and flew C-118s and T-39s. I stayed in the T-39 through assignments in Vietnam, NORAD and the Pentagon. My first flying assignment after leaving Washington was as the vice wing commander, then wing commander of the 436 MAW at Dover AFB, where I checked out in the C-5.

TMF: What was your favorite aircraft?
IG: I would have to say that I've enjoyed all of them—each for a special reason.

TMF: How would you summarize your personal safety philosophy?
IG: Well, the words we use in our IG briefing sum it up very well. Basically safety is the conservation of resources, both people and equipment, so we'll have them for the time we need to respond to our national requirements. It goes without saying we all have the responsibility to prevent the loss of these resources, especially due to unsafe practices.

TMF: What are your goals in improving our flight safety record?
IG: Of course our overall goal is reducing our Class A, B, and C mishaps to zero. To do that, we must keep safety at the forefront, yet without beating the subject to death and turning people off. We have to avoid the "black hat" syndrome in our safety programs, too. We must be supportive and concentrate on prevention rather than reaction to safety problems that have already occurred.

TMF: What are our problem areas in flight safety?
IG: There is one area that really concerns me. In some cases we're operating with some very aged equipment—50s and 60s technology—as we head on towards the 90s. As this equipment gets older, it has a greater tendency to fail and we're seeing some evidence of that type of situation now. We need to modernize and update our resources in keeping with fiscal realities.

TMF: How about the experience level of our crew force?
IG: Good point! We're seeing a younger crew force. But I think in MAC we're doing better than most in that we can "age" our people a little bit faster than other major commands. Unfortunately, some of our MAC routes don't really lend themselves to "aging" our aircrews. Although we get a fair amount of flying time, much of it is spent in a cruise profile between points. Probably our T-39 and airevac people are among our most highly proficient we have because of the nature of the missions they fly. Specifically I'm referring to their shorter legs with multiple takeoffs, approaches and landings in a given mission profile. However, I do not want to imply that our tactical or strategic crewmembers have a proficiency problem. They don't! Our MAC crews are the best in the business and professionals I'm very proud of.

TMF: How do you view the commander's role in promoting flight safety?
IG: Commanders set the tone. They can't tell their people to do something one way, then do it another way themselves. If a commander isn't a strong supporter of safety, you can pretty well bet the safety program is going by the wayside. A safety program is truly a reflection of the commander's involvement.

TMF: What about the roles of our first line supervisors?
IG: They're the key players! Our younger people, whether aircrew, maintenance, transportation—whatever—need continuous scrutiny and training from their supervisors. They're highly dedicated, very skilled and extremely smart, but they can get themselves in safety problems if they aren't properly trained and supervised. But still, in all, it boils down to each individual's responsibility.

TMF: What can we do as crewmembers to enhance flight safety?
IG: Talk it up. Emphasize safety. Don't wink at it. Sit down and really look at the safety program you're participating in and then support it. But you also owe it to your commanders, supervisors and safety officers to say why and how the safety program could be better. Don't accept it as it is if you think it can be better.

Look at the implications when we have a mishap—whether in the air or on the ground. We have to realize we have the potential for the loss of uncounted lives and millions of dollars of equipment.

TMF: In some people's mind, there seems to be a conflict between on-time departures—moving a mission—and doing that job safely. How do you view this?
IG: That's always an issue of discussion. There is the provision where an aircraft commander can say stop when safety problems arise. I don't know of any prudent commander who would question an aircraft commander in this situation. But problems do arise in the launch cycle. Many times the person in the command post is looking at a different set of problems than those in the cockpit, or those in maintenance or transportation. But we all have to recognize that when somebody says we've gone too far and that we have a safety problem, it's time to stop and take a hard look at what's going on.

TMF: Are there changes we need to consider?
IG: That's an interesting question. Overall, I think we're doing pretty well in our flight safety program. The tough part is what we need to do better than we're currently doing. It's the same old problem—the individual responsibility—knowing when to say stop. We all need to know our personal limitations and work within them.

TMF: Finally sir, what are we doing right?
IG: Well, we have an excellent reporting system in safety and it's this system that tells commanders and safety officers whether we have a potential problem. Programs like the AWTH (Accident Waiting to Happen), if used properly, can provide important feedback.

In addition, as the MAC airlift system has matured, we have always placed a high priority on safe mission accomplishment. That priority has been reflected in the consciousness and professionalism of all MAC members. We've seen that displayed in the positive interactions between aircrews, maintenance, aerial port and the wide variety of supporting players involved in executing and accomplishing the MAC mission. We're especially proud of the professionalism and dedication of all MAC people as they continue to keep the command flying safe.

TMF: Thank you, sir.

Excellence in Airmanship

Captain Stephen R. Perdue, Det 1, 1402 MAS, and Major Robert F. Burke, mission copilot from HQ TAC, were 20 minutes out of Langley at 25,000 feet when they heard a loud "thump." The red warning light in the gear handle flashed momentarily. A few minutes later the same thump occurred. The crew slowed the aircraft to the gear limiting airspeed and initiated a return to Langley. The pilots then ran the gear emergency extension checklist but the right main gear did not indicate a safe down and locked position. After declaring an emergency, the crew initiated a conference skyhook. Because of a 400 foot ceiling, an instrument approach and tower fly-by to visually determine the gear position were unsuccessful. The crew climbed back to VFR conditions and reaccomplished the checklist, again with the same result. Another fly-by resulted in the observers advising that they "thought" the main gear appeared down. Now with the ceilings and visibility deteriorating rapidly the decision was made to land before the weather worsened.

As the AC requested a radar approach, the visibility at Langley went below landing minimums and the crew was forced to divert to their alternate, Norfolk Naval Air Station, where the ceiling and visibility remained a fairly steady at 300 feet and 1½ miles. The crew accomplished all the checklists and flew a radar pattern. Captain Perdue landed the aircraft on the left side of the runway, keeping the aircraft weight off the right main gear as long as possible. He then gradually lowered the right main gear and allowed it to assume its normal load. After rolling about 3,000 feet down the runway, the right main gear began to fold beneath the aircraft. Captain Perdue maintained directional control as long as possible by using nose wheel steering, flight controls and wheel brakes. The aircraft departed the right side of the runway approximately 2,260 feet from the end and came to rest 30 feet off the prepared surface. As it left the runway, Captain Perdue shutdown the engines to avoid ingesting any debris.

Captain Perdue and Major Burke demonstrated an outstanding assessment of the situation and great finesse in landing the crippled aircraft. Their actions prevented injury to themselves, minimized damage to the aircraft and demonstrated them worthy of the "Excellence in Airmanship" award. ★

Left to right: Capt Stephen Perdue, FEAC; and Maj Robert Burke, CP.

Anytime's the right time to practice...

Timed Approaches

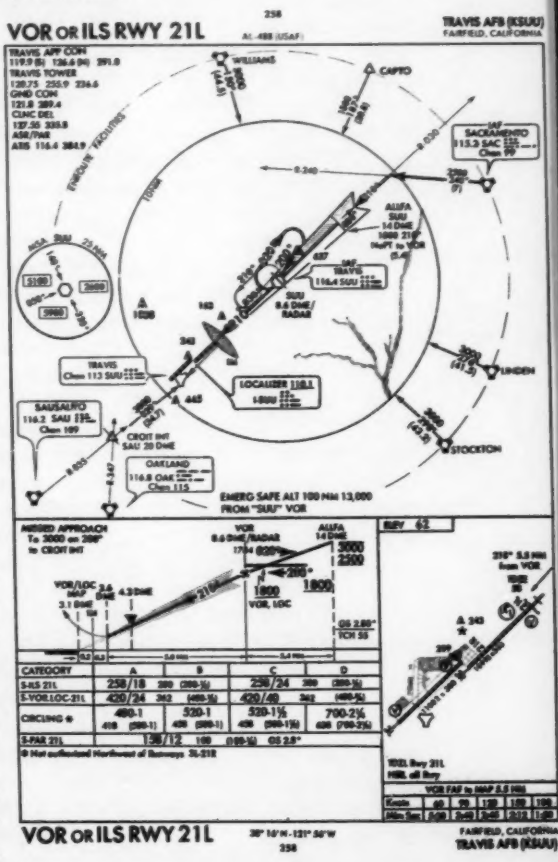
by Lieutenant Colonel Conrad S. Biegalski, USAFR, and
Major Paul W. Lavender, USAFR
312 MAS (Assoc) Travis AFB, California

Now, everybody knows low altitude non-precision timed approaches are for practice only. Right? Sure, we do 'em in good weather and, after all, those big airports we're gonna land at have ILS, DME, radar and other kinds of good stuff to help find the runway. So who cares about timing accuracy except for checkride day? Besides, even the checkpilot uses DME to identify the missed approach point (MAP) instead of timing the bloody approach. Ho Hum!

Well now, I must agree that it isn't just everyday that we need to fly a *real* timed approach (like maybe because it's the only kind available). Besides, the weather is *probably* gonna be VMC anyhow. But for you pilots who like to think ahead and plan for the worst, here's something you can stuff in your hip pocket for that one lousy day in your flying career when you are forced to rely on a timed approach with the weather at minimums.

All you need for this procedure is an INS, an airplane, a pilot, a helper, your handy approach plate and one crummy day when you gotta find the runway. (PAR, ILS, DME, and all that other razzle-dazzle stuff is down for the duration.) Since we, the authors, fly the C-5, we'll use the triple Delco Carousel IV INS installation for our example, but this timed approach procedure can be made to work on almost any INS unit with a bit of imagination.

Prior to landing, it's normal to have



the destination airport coordinates loaded in some INS waypoint. For today's example, we'll use waypoint seven because that's our lucky number. If you want to optimize, you could load and use coordinates for the approach end of the active runway. When you are close enough to the airport so that INS navigation is no longer needed, prepare for the procedure by selecting "manual" on the

INS control panel (instead of automatic, to prevent rollover), perform "WAY POINT CHANGE, SEVEN to ZERO" and punch "INSERT." Then, use the approach plate to determine distance from the final approach fix (FAF) to the MAP.

Example: Travis AFB VOR or ILS RWY 21L shows the distance from the VOR FAF to the MAP is 5.5. nautical miles (NM) with the MAP at 3.1 DME (approach end of runway). But remember, ILS and DME are kaput today.

Now, as you fly over the FAF (be precise), push "WAYPOINT CHANGE" and "INSERT" and flip the little rotary selector switch to display DISTANCE/TIME. The distance readout will be NM flown *from* the FAF (distance from FAF) which you loaded as waypoint zero when you hit the INSERT button over the FAF. Because this distance reads out only in whole nautical miles, you must interpolate (at normal groundspeeds, 15 seconds is approximately 1/2 NM) to be really precise; but I defy anyone to beat even whole miles for accuracy time after time. Yes, Virginia. When the INS distance says 5.5 NM, look over the edge and you'll see a runway!

The important feature of this whole procedure is the exceptional accuracy of the INS distance readout versus the inaccuracies of timing the approach based on a WAG average groudspeed.

Incidentally, there are a couple of things you should know before you go out and apply this technique. One, you gotta be in "MANUAL" and display "SOMETHING TO ZERO" mainly because it won't work the other way around. If you do it this way, INS drift rate doesn't amount to a hill of beans. Two, the distance/time feature we suggest will work just as well even if you had Frankfurt or Rio de Janeiro in the waypoint seven. The reason for this is a bit obscure but think on it and it'll all become clear.

Finally, please remember two important items. First, the INS should be used to detect potential wind shear, so leave both the #1 and #2 INSs on groundspeed and drift angle. The person working INS #3 can flip/flop from Distance/Time to wind display and back to provide you with all the "timed" approach data. Next, this is a technique and not a procedure. It does not remove the requirement to attain and fly a stabilized final approach speed and hack the clock, etc., at least not yet. It's a super way to provide you with much more accurate information than you had before, for that one day when everything isn't going your way and the only approach available is the kind that requires the use of a clock.

Try it at your friendly MAC homedrome on a local trainer sometime. You may just like it. ★

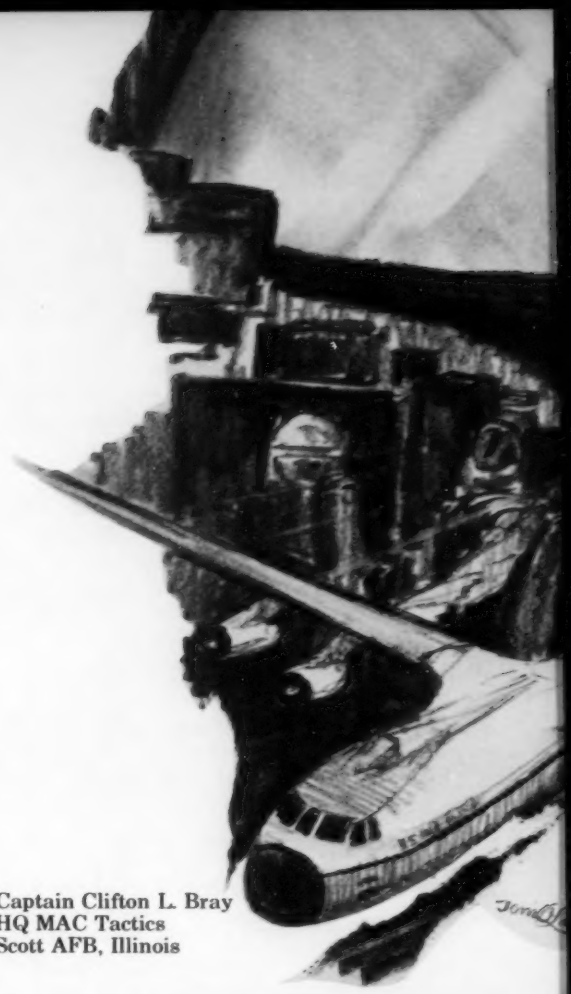
ABOUT THE AUTHORS

Lieutenant Colonel Biegalski is a command pilot with over 6,000 hours of flying time. He is currently the chief of standardization at the 312th MAS.

Major Lavender is a senior navigator with over 5,000 hours of flying time, and is the chief of training at the 312th.

The Link

When will they learn?



by Captain Clifton L. Bray
HQ MAC Tactics
Scott AFB, Illinois

Do you really believe you had a psychic link with those people?" the Air Force psychiatrist asked insistently.

"Yes. Yes, I do," came the reply from the tired face whose eyes reflected many sleepless nights. "But only under very special conditions."

"And what's the reason for your belief?"

"The dreams, doctor."

"And how many of these 'dreams' have you experienced?"

"Two," came the answer, "so far."

THREE YEARS EARLIER

The winds picked up the West Texas dust and turned it into airborne sandpaper, burning the cheeks of the students rushing from class to class. However, the wind and sand were not on Doug Campbell's mind. His thoughts were elsewhere. He had just completed his initial solo in a Cessna 150. This phase of his ROTC training was the first step toward achieving his lifetime goal—becoming an Air Force pilot.

"I did it, I did it, I did it!" he cried as the door to the ROTC office flew open.

"Did what?" Master Sergeant Dickson asked in a carefully disguised monotone.

"Soloed! Hey, you guys know I've been waiting all week for the weather to clear up."

"We know, Doug. We've been listening to your complaints for 10 days," complained Captain Walker.

"You'd think it was the first time anyone ever took a plane aloft!" kidded a freshman cadet.

"Well, I'm proud of you, Doug." The deep confident voice from across the hall belonged to Lieutenant Colonel Jim Dallas, Doug's favorite ROTC instructor. "Do you have a few minutes, Doug? I'd like to talk with you."

"Sure, Colonel Dallas," Doug said in a cautious tone. "Anything wrong?"

"No, nothing at all. I just want to give you a little philosophy."

"Sure, sir. Uh, what about?" Doug glanced at his watch, anxious to tell Joyce about his solo and really not in the mood for any delays.

"I won't keep you long," Colonel Dallas replied, catching the anxious tone in Doug's voice. "I want to talk to you about flying. I just want to give you some advice."

"Well, I can use some help. In fact, I still can't correct for the wind during lazy eights and..."

Second Place, 1983 MAC Flying Safety Writing Contest

"Forget about that," the colonel snapped. "Your proficiency will come with time. Always does. But there are more important subjects than wind corrections. Just have a seat and, please, listen very closely."

Doug sat down. Gazing at the framed photographs and plaques arranged in a disorderly pattern on the wall, he eyed the green flight suit hanging in the corner—the colonel's name tag and silver wings on one side of the green bag, and silver oak leaves on the shoulders. His gaze then moved to the papers on the desk. The top line on one sheet caught his eye: "CLASS A MISHAP, T-38, ONE FATALITY, PRELIMINARY REPORT."

"Doug, have you ever jumped into your car, started it up, driven to your destination, jumped out, and then realized it was all done automatically? You couldn't even remember each stop sign, each turn, the other cars. It was like you just got in and suddenly you were there."

"Sure." Doug answered. The sudden question startled him. He took his eyes off the desk and looked at the colonel. "Sure, it was like that today, driving from the airport after my flight."

"Well, that's rule number one. Never get into *that* habit while you're flying! Never allow flying to become so routine that you do it automatically. When you come down from a flight, every detail should be vivid in your mind. Why? Because you've devoted every ounce of your attention to flying the aircraft, nothing else." The colonel's voice was dead serious.

"Second." The colonel pointed a shaking finger at the dusty sky outside the window. "When you're up there, you're out of your environment. You're a fish out of water, and contrary to popular belief, man was not made to fly...at least not the way we do today. There are tremendous G forces we have to train our bodies to withstand, the air temperature is well below zero, the night will play tricks on you, and the atmosphere has very little oxygen to breathe. We have overcome these obstacles through our equipment and our training. But never, ever forget you're in a different environment up there. Nature will not forgive you for your mistakes.

"Third, during your flying career, you're going to run a 'Gauntlet of Emotions.' There will be days when you'll swear you're the best pilot that ever pushed a throttle. Other days, you'll come down and want to kick yourself because you couldn't do anything right. You'll be happy, mad, sad, humiliated, exhilarated, scared, thrilled, sick, and solemn. You'll be joyful or appalled. You'll run back and forth along that spectrum during your entire career—from proud to disgusted. It's normal and not altogether bad. But you need to know it, Doug, and be mature enough to handle it. Believe me, those who can't, won't make it."

The colonel paused for a moment, then said,"That's all I have, at least for now. Do you have any questions?"

"No, sir. Not at all." Doug was motionless. The colonel's short speech had been very forceful, almost emotional. Doug thanked him, got up, saluted and quickly left the room.

"What was that all about?" queried Dave Crenshaw, a fellow cadet.

"Colonel Dallas was just giving me some advice...he seemed a little upset though," Doug answered.

The explosive decompression shook the inside of the C-141 like a bomb.

"Well, one of his former ROTC students was killed a week ago during a T-38 night solo. And only a few weeks from graduation, too. I think Colonel Dallas is pretty upset about that," Dave volunteered.

"Yeah, I guess so. Seems like something else, though. He's really been acting strange the last few days. Hey, look, I've got to go see Joyce. I'll catch you later."

Colonel Dallas leaned back in his chair. The accident had upset him. But what really made him uneasy was the dream he had had the night of the crash. It was this dream that bothered him now, not the crash itself. He gazed out the window and watched Doug Campbell running against the wind, one hand up to his eyes to ward off the dust.

"Shanwick Control, Shanwick Control, this is MAC 40629. How do you read?" Doug Campbell's voice was crisp and clear.

"Roger, MAC 40629, Shanwick has you loud and clear, standby for transponder setting." The Scottish accent beamed back through Doug's headset.

"Crew, Victor Two is primary, goodby HF!" rattled Doug.

Thank goodness, thought Technical Sergeant Bill Simpson. Four hours of HF radio is enough to drive a man nuts! His eyes quickly scanned the instruments on his engineer's panel. All was looking good, except for a slightly high vibration on number 1 engine. Probably the indicator, he thought, 2 more hours and they would be on the ground at Frankfkurt and...

"MAC 40629, Shanwick clears you to Frankfurt via Upper Green One, Nattenheim, Arrival Route Nine Delta Fox. Set transponder to read 4021," the controller interrupted.

"Roger. Understand Shanwick clears MAC 40629 to Frankfurt, UG-1 Nattenheim, 9DF, squawking 4021," Doug repeated.

It was almost 3 years since he'd left Texas. He'd completed pilot training and was assigned the aircraft of his choice, a C-141 Starlifter. He had really run that "Gauntlet of Emotions" Colonel Dallas told him about, too. Right now he was at the far end of the self-contented side. He was only a month away from going to Altus for aircraft commander school.

"Well, all is looking good for the coast-in, Doug." Captain Pete Johnson, the aircraft commander yawned. "The INSs both agree, tacans and VORs are showing us right on course. Engineer, how's our fuel?"

"Doing great sir. 41,000 pounds. We made a lot of gas by climbing to Flight Level 410," Sergeant Simpson said while handing up the Form 25C.

"Good. I'm going to run downstairs for a few minutes. You can just lay the oxygen mask across your lap, Doug. I'll be right back."

"Copilot's aircraft," answered Doug as he pulled down the quick don oxygen mask and laid it in his lap. "Would you bring me back a cup of water?"

"You bet. Want anything Sergeant Simpson?"

"No thanks, sir," answered the engineer while gazing at the slightly high EGT for number 1 engine. "I just finished a soda."

"I'm going to get a phone patch with Rhein Main Metro and recheck the weather," Doug informed the engineer. He moved his radio selector switch to HF 1 and called, "Croughton Airways, Croughton Airways, MAC 40629."

"Go ahead, 40629", came the staticriddled reply.

"Roger. Request phone patch with Rhein Main Metro, weather for Frankfurt at 0630 Zulu to include temperature and pressure altitude."

"Copilot, engineer," Sergeant Simpson called over the interphone. "I'm going to run downstairs myself. I'm isolating Number 1 generator. I'll be back in a sec to copy the weather," he replied while unstrapping.

"I'm standing by for Rhein Main Metro now, I'll pass you the information when you get back." Doug smiled.

Doug was proud. He'd remembered to

The oxygen mask! How could I have forgotten?

recheck the weather and all the other details. He was confident in his ability. He had made over 50 trans-Atlantic flights and knew the routes and procedures cold. In fact, hopping across the ocean was no different than getting in his car and driving to the beach. No sweat, almost routine...

"Ah, the Scottish coast at night. Just look at those lights!" Doug exclaimed as he adjusted his seat full forward to peer at the tiny dots below. "What a sight, it's as if...

The explosive decompression shook the inside of the C-141 like a bomb. Doug felt the air being sucked from his lungs. A mist enveloped the cockpit, maps were flying everywhere, and the cold, the terrific cold!

Okay-now-just-stay-calm, Doug said to himself as the adrenaline started to flow. The emergency procedures were clear in his mind: Continuous ignition on, Throttles-Idle start, Autopilot-off, Spoilers extended, lower the nose, 220 knots until we check for structural damage, start a turn off the airways, IFF to emergency, make the radio call.

"Mayday, Mayday, Mayday, this is MAC 40629, we are commencing an emergency descent out of Flight Level 410, turning to a heading of 360°," Doug called into the HF radio.

Realizing his mistake, he looked down to change his selector switch to VHF radio 2. Suddenly he realized he was feeling dizzy! The oxygen mask! How could I have forgotten that? The mask had fallen by his feet. Doug reached for it slowly, his mind starting to drift. How could I make such a mistake! Got to get the mask, TUC at 410...15 seconds...airspeed is way too high...I gotta see about the passengers...I feel dizzy, numb...need to check emergency safe altitude...vision is blurred...out of my environment, out of my environment...I'm out of my environment! Oh, Colonel Dallas, Colonel Dallas...

"Colonel Dallas!" Those were Doug's last words as he fell forward on the yoke, sending himself and the C-141 into oblivion.

Colonel Dallas sat straight up in bed, sweat on his face, his heart beating wildly.

"What's the manner, honey!" his wife exclaimed, turning on the light.

"The dream...just like 3 years ago" he gasped. "The dream...I swear someone was calling my name, just like 3 years ago!"

"Do you think you'll have more dreams?" the psychiatrist asked, looking into the tired face.

"Probably so, doctor," replied Colonel Dallas, "at least until they learn...at least until they learn." ★

ABOUT THE AUTHOR

Captain Bray is a graduate of Texas Tech in Lubbock. After completing pilot training in 1978 at Reese AFB, he was assigned to Charleston AFB, South Carolina, where he served as aircraft commander, instructor and flight examiner in the C-141. He is currently assigned to the Directorate of Combat Tactics, Special Operations and Combat Control Division at HQ MAC.

When the takeoff began, nobody knew there was only...

60 Seconds to Live

Clipper 759, a light blue-and-white Boeing 727, was Pan Am's regularly scheduled passenger flight from Miami to Las Vegas, which included a brief stopover in New Orleans before continuing. On Friday, July 9, Clipper 759 was just a few minutes from takeoff as it departed its loading gate at New Orleans International Airport. To the east, a large, black cloud sat ominously over the departure end of runway 10.

With an estimated takeoff gross weight of over 170,000 pounds, Clipper 759 taxied slowly to the approach end of runway 10. Because of the high gross weight, high density altitude and wind speed, it was the only runway the 727 could safely use. Just about 1,000 pounds under the maximum gross takeoff weight, the figures showed that Clipper 759 would have to use about 7,000 feet of the 9,000+ feet of the runway.

Just after taxi at 1559 local, the first officer requested a wind check. The ground controller told him the wind was 040° at 8 knots. Barely 4 minutes later, the ground controller told Clipper 759 the wind was "...070° at one seven...peak gusts two three, and we have a low-level wind shear alerts all quadrants, appears a frontal (sic) passing overhead right now, we're right in the middle of everything."

With those warnings, the captain advised the first officer, who would be flying the departure, to "...let your airspeed build up on takeoff...." The captain also said they would turn off the air conditioning packs to increase the amount of engine thrust available on numbers 1 and 3. Finally, Clipper 759 was cleared for takeoff at 1606:30.

At about 1608, the Pan Am jet began its takeoff roll down runway 10. Approximately 7,000 feet down the runway, the heavily-loaded 727 lifted off and climbed in a wings level attitude until about 100 to 150 feet.

At 1608:45 the captain told his first officer, "...Come on back you're sinking, Don...come on back!" Still, the sinking Boeing would not climb. A few seconds after the captain's warning, the ground proximity warning system activated with its "whoop whoop, pull up whoop." But it was too late to avert disaster.

Initially, Clipper 759 hit a line of trees some 2,300 feet from the departure end of runway 10. Judging from the swath angle through the trees, the 727 hit the tops at about 50 feet AGL in a 2° or 3° left bank. The Boeing then hit a second group of trees about 55 feet AGL and 300 feet further east, this time with about 6° left bank. Clipper 759 continued an uncontrolled left roll as it moved eastward, striking more trees and several houses before coming to rest approximately 4,600 feet from the departure end of the runway. It struck the ground in a left-wing down angle of about 105° on a heading of 089° magnetic, disintegrating during the impact, explosion and subsequent fire.

All 145 persons aboard the ill-fated jet perished along with eight persons on the ground. Eight others were seriously injured. Six houses were totally destroyed by the crash and ensuing fire, and five were substantially damaged.

Although there was virtually nothing left of Clipper 759, the National Transportation Safety Board (NTSB) investigators were able to determine that the accident was not caused by lightning or mechanical malfunction.

It also determined that the airplane, the flightcrew and the air traffic controllers were not factors in this crash. Accordingly, the Safety Board directed

its attention next to the weather as a possible cause factor in the tragedy. They also looked at aircraft performance and operational factors which might have caused the 727 to descend and crash.

Analysis

Of special interest to the NTSB was the possible role microbursts might have played in the crash of Clipper 759. Fundamentally, a microburst is a simple atmospheric flow, basically a downdraft, that spreads out horizontally in a radially divergent flow upon reaching the ground. Traversing a microburst at low altitude, an airplane will encounter increasing headwinds as it enters the microburst, remnants of the downdraft near the center, then increasing tailwinds as it departs the area.

Both Pan Am and the National Oceanic and Atmospheric Administration (NOAA) analyzed the data available from many weather sources. The NOAA analysis concluded that Clipper 759 flew through the center of a downdraft shortly after liftoff. An analysis of the flight data recorder strongly supports the conclusion that the downdraft was a weak to moderate microburst. NOAA evidence also indicated Clipper 759 flew through an adverse horizontal wind shear of 39 knots, and a vertical gradient of 7 feet per second at 100 feet AGL. Based on eyewitness accounts and other data, the center of the microburst was centered just north of the intersection of runways 10 and 19.

The Pan Am analysis, conducted by Dr. Ted Fujita, showed a microburst had impacted the airport and was in progress between 1608 and 1610. (Clipper 759 had started its takeoff roll at about 1608.) The center of the microburst, according to the data studied by Dr. Fujita, was 2,100 feet east of the centerfield low-level wind shear alert system (LLWAS) sensor, and 700 feet north of the runway 10 centerline. That put the microburst about 1,300 feet west northwest of the one described by NOAA. But both analyses indicated the 727 flew through the microburst and encountered, in very rapid succession, an increasing headwind, a downdraft and then a decreasing headwind (increasing tailwind). To keep all this in perspective, the total elapsed time from brake release to initial impact was 63.9 seconds, total distance covered was just over 11,500 feet with a total time from liftoff until impact of just over 20 seconds!

"Come on back, you're sinking..."

At the time Clipper 759 was preparing to take off, the National Weather Service radar at Slidell, Louisiana, 30 miles northeast, showed moderate echoes were located either right over or just east of the departure end of runway 10. Although they showed up as "moderate" echoes on the radar, the nonattenuated intensity (reprocessed data) of these cells showed them to be heavy returns. Cells are classified as "heavy" when precipitation rates are between 1.0 and 2.2 inches of rain per hour. Four pilots on the ground at the time of the accident who were "painting" the storms, also testified the cells showed up on their aircraft radars as heavy returns.

When the NTSB examined the weather records of that day, they found that at 1609:03, just seconds after the crash, a wind shear alert involving the eastern sensor sounded. At the time, the centerfield sensor was showing the wind to be 080° at 15 knots. The east sensor, the one closest to the crash, showed the wind to be 310° at 6 knots. Those figures show that Clipper 759 went from a 14-knot headwind component as it started its takeoff run, to a 5-knot tail-

wind component just before it crashed. Since the tree line on Williams Boulevard (the impact site) is 300 feet beyond the east sensor, the NTSB surmised that the ill-fated jet experienced an approximate 19-knot decreasing headwind shear within 5,850 feet!

Furthermore, according to witnesses, the wind that was blowing just before impact was causing whole trees to move. That, according to the Federal Meterological Handbook No. 1, is equivalent to a wind speed of between 28 and 33 knots.

Probable cause: The airplane's encounter with a microburst-induced windshear!

This, then, is what the brief flight of Clipper 759 looked like. The actual takeoff roll began in light rain and encountered increasingly heavier rainfall immediately after liftoff. At rotation and liftoff, Clipper 759 was operating in a headwind with two heavy intensity cells located over the departure end of runway 10. Between liftoff and initial impact with the trees, the wind changed within a matter of seconds to a strong tailwind. The minimum and possible maximum magnitudes of this decreasing headwind shear were between 19 and 40 knots. For that 20.9 second flight, the possible minimum and maximum rates of decreasing headwind shear between the two points were between .9 knots/second and 1.9 knots per second. In addition, the airplane encountered a downdraft of between 5 and 10 feet per second. The NTSB concluded that the first officer was not able to arrest the airplane's descent rate in sufficient time to prevent the accident.

Based on its analysis of all the available data, including the data contained in the NOAA and Pan Am wind analyses, the NTSB concluded that the winds emanated from a microburst centered about 2,100 feet east of the centerfield sensor and 700 feet north of the runway 10 centerline. The NTSB also concluded that during the flight Clipper 759 most probably experienced about a 38-knot decreasing headwind shear and a downdraft of about 7 fps at 100 feet AGL.

The investigation attempted to define the parameters of the airplane and its crew during the previously mentioned weather conditions. Simulations conducted by Boeing and the NTSB centered on 13 hypothetical flight profiles developed to establish the environmental conditions affecting Clipper 759's takeoff. These simulations showed that Clipper 759 most likely climbed for about 11 seconds, after which the pitch attitude decreased from about 13° to about 5°. At that time, a descending flight path developed. The simulations indicated the pilot probably reacted to the descending flight path, and a nose-up pitching moment was developed within 6 seconds after the start of the descent.

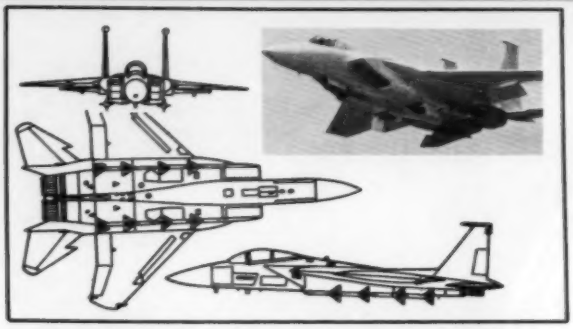
Probable Cause

After many months of painstaking research, analysis, and simulation, the NTSB concluded that the probable cause of the Pan Am Flight 759/New Orleans disaster was the airplane's encounter during liftoff and initial climb phase of flight with a microburst-induced wind shear. The effects of the downdraft and decreasing headwind, coupled with other factors, made recognition difficult for the pilots, and the 727 crashed into the trees just beyond the departure end of runway 10. Contributing to the accident was the limited capability of current ground-based low-level wind shear detection technology to provide definitive guidance for controllers and pilots to use in avoiding low-level wind shear encounters.

In coming issues of *TMF*, we will explore the deadly phenomenon of the microburst, how to detect it, how to avoid it and, as important how to fly out of its potentially deadly grasp.

—Adapted from NTSB AAR-83/02

World Aircraft Recognition Guide

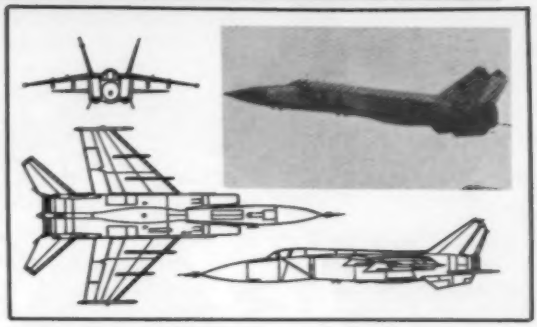


McDonnell-Douglas F-15 Eagle

Since the F-15's first flight in July 1972, it has rapidly become the mainstay of the Air Force's fighter interceptor fleet. Today the F-15 is exported to this country's allies in the Middle and Far East, including Israel, Saudi Arabia and Japan. In fact, Japan is now building Eagles under license. Actual numbers of F-15s are increasing all the time, and chances are good that MAC airlifters will see these fighters more often than before.

The F-15's virtually smokeless engines, special low-visibility paint and cat-like agility make this airplane difficult to see. If you are lucky enough to spot it, though, the shoulder-mounted wing and twin, tapered vertical stabilizers make the F-15 easy to identify. Coupled with dual, side-by-side turbofan engines located in the wing roots and its slanted intakes located well forward of the wing leading edge, the Eagle is easy to distinguish from other U.S. fighters.

DIMENSIONS
Span—42 ft 9½ in (13.04m)
Length—63 ft 9½ in (19.44m)
Height—18 ft 5½ in (5.63m)
Weight—44,500 to 68,000 lb (20,185 to 30,845 kg)
Speed—1,520 mph (Mach 2.3) above 36,000 ft
Service Ceiling—65,000 ft (19,800m)
Armament—4 AIM-7s, 4 AIM-9s, 20mm Vulcan cannon



Mikoyan MiG-25 Foxbat

Known as the Eagle in the USSR, and as the Foxbat to NATO, the MiG-25 has been in service with the Russians since about 1970. First to see service was Foxbat-A, the interceptor version, followed by Foxbat-B (reconnaissance), Foxbat-C (two-seat trainer), and Foxbat-D (ELINT reconnaissance). The Foxbat is exported to Libya, Syria and Algeria in both A and C versions, and to India as the Foxbat-B and C.

The Foxbat, like the F-15, can be identified by its shoulder-mounted wing, twin, highly swept vertical stabilizers and dual, afterburning turbojets. The intakes are much larger than the F-15's, though, extending almost to eye-level with the cockpit. MAC crewmembers should be aware of the countries flying the Foxbat, especially when transiting the Mediterranean.

DIMENSIONS
Span—45 ft 9 in (13.94m)
Length (including probe)—73 ft 2 in (22.3m)
Height—18 ft 4½ in (5.6m)
Weight—44,100 to 77,160 lb (20,000 to 35,000 kg)
Speed—1,850 mph (Mach 2.8) above 36,000 ft (Foxbat-A)
Service Ceiling—80,000 ft (24,385m)
Armament—4 Acrid AAMs

A "jumper's eye view" of Volant Rodeo. USAF photo by TSgt Ken Hammond.

by Captain Byron L. Howard
Associate Editor

Rodeos come and rodeos go, and just about everyone knows what a rodeo is. It's a series of events in which cowboys ride wild horses and brahma bulls, and generally try to determine who's best at what. But there exists a rodeo without one single bucking horse or bull. The name of this rodeo without animals? Volant Rodeo.

For the past 5 years, Pope AFB, North Carolina, has the been the locale of this rodeo without horses. Since 1979, the Military Airlift Command has held a competition among its airdrop-qualified units, both C-130 and C-141, to determine "the best of the best." (*Editor's Note:* Airdrop competitions are not new to MAC. From 1969 to 1971, a series of airdrop contests pitted the best of the MATS airlifters against one another. The competition was reestablished in 1979 as "Volant Rodeo.") This year Volant Rodeo was held from 13-17 June. For this week, airdrop units representing over 30 active duty, Air National Guard, Air Force Reserve and foreign units met to test their skills against each other, their machines and the clock. The competition was as fierce and intense as always, not only among aircrews, but maintenance people, combat controllers, security police and aerial port specialists as well.

Since its inception, Volant Rodeo has grown to include not only MAC airdrop units, but airdrop teams from around the world. Seven teams were present this year representing Australia, Brazil, Canada, Germany, Italy, New Zealand and Portugal. This year also marked the first time a team from MAC's newest unit, the 1st Special Operations Wing, made its debut. But no matter where they came from, each team had but one single, all-encompassing goal—to be called "the best of the best." Some teams prevailed. Others succumbed to "trophy fever," and will have to try again next year. Some lost, but all won in the end.

The Tests

Preparation for the actual competition has become a well-planned operation for the majority of the participating units. Months in advance, teams are chosen by their unit commanders or, as in the case of the 62 TAS, by their peers.

Groundhog's view of a dirt assault landing. USAF photo by TSgt Frank Garzelnick.

Mud Wrestling. MAC Style—Two SPs "backstroke" through the recondo course. Photo by TSgt Ginny Karp.

A local flyoff within the parent wing then determines the Volant Rodeo competition team members. Members of the combat control teams (CCT), security police (SP), maintainers and aerial ports are chosen in much the same way as the aircrews. The men and women finally selected then practice to hone the skills needed to win the rodeo.

Much of Volant Rodeo is focused on the ability of the aircrews to accurately deliver three types of loads—heavy equipment, container delivery system, or CDS, and personnel. Flight crews are evaluated on their ability to navigate accurately and arrive over the drop zone within seconds of a predetermined arrival time. In addition, C-130 and the German/Transall C-160 crews are evaluated on three shortfield, assault landings.

But Volant Rodeo is not only a test of aircrew and airplane. Each team is tested again and again in an all-out effort to determine which team in each category is the best at its particular job. Combat control teams, for instance, are tested on the rugged recondo course which tests speed, agility and endurance. CCTs are also tested on a 6-mile run with a 44-pound rucksack, actual parachute jumps, drop zone establishment and land navigation. Both MAC and non-MAC SP units, assigned to guard MAC resources, are tested on land navigation, combat tactics, the recondo course and a combat patrol course.

One very important group of people MAC depends on to complete its day-to-day mission are the aerial port specialists—those men and women who rig and load the heavy equipment and CDS platforms. These men and women are tested on their ability to find hidden faults in both heavy equipment and CDS loads, as well as their ability to rapidly and safely on and offload an aircraft with its engines running.

Finally, no plane, no matter how well loaded or protected, gets off the ground unless the maintenance men and women have done their job. From the time a plane lands at the competition until the day it leaves, the maintenance technicians' jobs go on from dawn till dawn. Maintenance specialists are graded on the overall condition of the aircraft, pre- and post-flight inspections, and refueling operations. And each one is good at his or her job.

"We know our job—we do it better than anyone else and that's why we're here," one of the maintainers said as he tightened a loose fitting. "Not only the

Maintenance—A big part of Volant Rodeo. USAF photo by Ron Lewis.

Combat controllers on 6-mile run with pack. USAF Photo by TSgt Ken Hammond.

aircrew, but everyone else on the team depends on everyone else to do their jobs—right—the first time!" he finished.

A Flight With "The Best of the Best"

Always looking for a story, I wandered out to the flightline in search of an aircrew to fly with. Quite by chance, I ended up on the 314 TAW's C-130 with Major Norman "Stormin' Norman" Sevigny and his crew, all of whom were from the 62 TAS. During the flight, it was obvious to see why these men had been selected by their fellow crewmembers from the 62nd—why they had won the right to represent the "Rock" at Volant Rodeo. The overall professionalism of the crew was evident in the quiet, calm way they executed a checklist, navigated with precision and dropped the load within feet, not yards, of their target. After the competition was over and the best aircrew had been named, I asked the crew what they did to win the competition.

"One of our big advantages was the extra time we devoted to route and target study," Captain James "Jimmy Dee" DeAngelo, the navigator explained matter-of-factly. "We started the day before with intense study by the copilot, the flight engineer and myself picking out doppler update points and prominent landmarks."

"Chart reading was something new to me," commented Technical Sergeant David "Rag Wrench" Grimm, the flight engineer. "Still, it really helped the crew out, and gave me extra confidence." About this time I happened to recall something I had heard about "Omar."

"That's my little 6-year old girl's stuffed orangutan," explained loadmaster Technical Sergeant Edward "Peter" Moore. "As we were leaving to come here, she walked up and gave it to the crew for luck. And it went everywhere we did. I guess it worked, too," he said with a smile.

Was there any luck in winning a trophy at Volant Rodeo? According to Captain Barry Weber, aircraft commander from the 146 TAS (ANG), Van Nuys, California, there was in his case. "Pure luck," he said smiling. "I wasn't the original AC for the rodeo. The guy who was supposed to come out here had an accident with a lawnmower, and I was the only one available to take his place." Captain Weber, who with the rest of his crew walked off with "best shortfield landing" honors, took time to explain his idea of an assault landing. "First of all, I don't like the term 'assault' landing. I prefer to think of it as a 'precision' landing. To me, that means a decent approach and very good airspeed control on final."

Volant Rodeo 83 also tested the competitor's ability to act under stress, albeit unscheduled. During their personnel airdrop, Master Sergeant John Mills and Technical Sergeant Charles Brown from the 445 MAW (Associate), Norton AFB, California, noticed one of the paratroopers couldn't be awakened at the 20-minute warning. After trying everything they could think of to awaken the young sergeant and finding no pulse, they began cardiopulmonary resuscitation (CPR). Captains Marty Mazick and William Wade, the pilots, began an immediate return to Pope while also notifying ATC of their emergency. Meanwhile, Lieutenant Colonel Neil Madden, the navigator, went back to

further assist the loadmasters in trying to revive the paratrooper. Madden's experience with a CPR course was the most recent on the crew. Between the three of them, they kept the soldier alive, though losing his pulse three times before landing. Pushing their C-141 to max limiting airspeed, Mazick and Wade made the return to Pope in 8 minutes from first notification, landed and

turned off onto the first taxiway where an ambulance and trauma technicians were waiting. Quick thinking, proper training and a fast plane undoubtedly saved the life of the young trooper.

Safety—The Most Necessary Part

For the past five rodeos, safety has played a most important part in the overall operation. It's built into the scoring and aircrews are constantly aware of it. In fact, each competition judge is a safety officer first and foremost.

"An unsafe military operation is an ineffective one," commented Brigadier General Browning C. Wharton, Jr., Volant Rodeo 83 Commander in an interview with *TMF*. "As always, when crews are competing with the clock or themselves, safety becomes an important factor. But thanks to the professionalism of the teams, Volant Rodeo 83 was completed without incident."

But there were other lessons learned at Volant Rodeo 83. "Foreign nations gain tremendously from the crosstell value at Volant Rodeo," explained General Wharton. "Techniques and procedures seen here often become a part of a visiting nation's aircrew procedures."

General James R. Allen, CINCMAC, stated his feelings in his remarks to the teams during the awards ceremony. "This is one of the most, if not the most, important international competitions in the free world," he noted. "The American people and the citizens of our visiting teams' nations are the real winners. The ability to defend their freedom is enhanced by this competition."

VOLANT RODEO 84

Though all the teams have left Pope, you can bet they'll be back next year. "The rodeo is officially over for 1983, but the preparation is really just beginning for Volant Rodeo 84," noted General Wharton. "All the participating teams must now go home and begin solving some of the airlift problems we face in getting our troops and cargo where they need to go. We've still got to be innovative."

No, sir! Volant Rodeo was not your usual rodeo by a long shot. It was a rodeo where the cowboys wore flightsuits and camouflaged fatigues. Their boots had laces, but no spurs. The peacekeepers fired lasers and the good guys dropped men and equipment. It was a rodeo without one single horse!

The Winners

Best Overall Wing	314 TAW Little Rock
Best C-130 Aircrew	314 TAW Little Rock
Best C-141 Aircrew	63 MAW Norton
Best C-130 Maintenance	62 MAW McChord
Best C-141 Maintenance	315 MAW (Assoc) Charleston
Best Combat Control Team	435 TAW Rhein-Main
Best Security Police	463 TAW (96 SPS) Dyess
Best Joint Inspection	62 MAW McChord
Best Shortfield Landing	146 TAW (ANG) Van Nuys
Best C-130 ERO	616 MAG Elmendorf
Best C-141 ERO	437 MAW Charleston

Personal Survival Kits

Do it yourself

by Staff Sergeant Gary J. Turner
3636 CCTW Public Affairs
Fairchild AFB, Washington

You wouldn't forget to put your flightsuit on in the morning before climbing aboard your flying machine, would you? Of course not! Well, the same principle should apply to packing a personal survival kit in that flightsuit.

"But my aircraft has a survival kit packed in the back (or on top of the wing) of the plane. No need to take up valuable flightsuit space with something I'll never use." Wait a minute. You just said the key words, to wit, "...in the *back* of the aircraft."

And if you think your chances of living through an aircraft forced landing are slim and none, you'd better think again. C-130s, for instance, have been successfully ditched and force landed. The accidents were survivable, but the crews of these successful forced landings had only enough time to get out of the craft before it either burned or filled with water. The result: one crew minus their survival kit equals one very unprepared crew.

Believe it or not, a personal survival kit is a lot more than an extra pack of cigarettes and a candy bar stuffed in your pocket. Having the necessary equipment for an emergency situation increases your chances for survival immeasurably. However, being prepared doesn't mean carrying a backpack to your aircraft and having another crewmember hold it for you. Being prepared does mean, on the other hand, packing a Personal Minimum Survival Kit in your flight suit.

Possible Containers—Included here are a soap dish with cover, far right, and a plastic cigarette case, foreground.

Such a collection of items is aptly named. It's personal because only *you* decide what *you* will need, and only *you* put it together. It's minimum because only the bare essentials are included. Finally, it's a survival kit because it will enable you to survive and, due to its small size, can be packed easily in your flight suit. Come on now! With all those pockets, you've got to have room somewhere.

Before packing a kit, stop by your local life support shop, tell them you're making a Personal Minimum Survival Kit and see if they can provide you with any items for your kit. Each shop differs in what it can supply, but it's worth a try. Besides, the insight they can provide will prove helpful in any case.

What to Pack

The contents of a kit are determined by the type of terrain you're flying over and your own personal requirements, thus no two kits will be the same. Survival kits should, however, meet certain specific criteria. All items must be necessary, practical and, more importantly, compact. Commercial survival kits containing everything but the kitchen sink (which can be purchased separately at extra cost), range in price from $5 to $80, yet are not as good as the one you design and construct for yourself. Your kit is designed by you, for you, and the locations you fly over most often. Too, most of the items in such a kit can normally be found around the home which greatly reduces the cost.

The simplest kit, and the easiest to carry, is the pocket survival kit. Here's what you'll need to put together such a kit:

PENLIGHT FLASHLIGHT—An inexpensive (less than $2) penlight barrel works quite well. Remove the batteries and spring.

MATCHES—Cut a plastic straw the same length as the flashlight barrel and seal one end by melting it, or filling it with wax from a candle. Break several wooden matches in

half and place them inside the straw so their heads don't touch. Seal the other end of the straw. The straw itself can be used as tinder in starting a fire later on. You can also dip the matches in paraffin, further waterproofing them.

NEEDLE—Magnetize a needle by rubbing it with a magnet. Hang it from a string and note which end points north. Paint that end. Drop it in the flashlight barrel.

SAFETY PINS—Drop two small safety pins inside the barrel.

KNIFE—You may have a small knife that will fit inside the barrel of the flashlight. If you don't, we recommend a single-edge razor blade. It's best if the blade has a hole in it. That way, the safety pins can be used as a handle.

BIRTHDAY CANDLE—Get the "trick" kind if possible. If the wind blows it out, it will relight itself.

WIRE—Squeeze some very thin, pliable wire for snares next to the candle and matches.

A Blade Is A Blade—A good knife is essential, but knowing how to sharpen it is just as important.

Food For Thought—Shown here are possible items for your kit. Included are a "metal" match (basically flint and steel), and water purification tablets.

FOIL—Fold and tuck a piece of aluminum foil around the candle, matches and wire. Foil can be used as a reflector or a signal mirror. In the remaining space, try stuffing other items such as tincture of iodine or globaline tablets for purifying water.

Larger kits can be constructed by using plastic cigarette cases, soap dishes or band-aid tin box. Remember, the number and type of items are determined by the designer, and that's you. Don't forget any medication you might need, such as anti-allergy or hypertension drugs.

Some additional items you can place in a larger kit include:

PLASTIC—Handled carefully, it can be used as a shelter, raincoat or a sleeping bag when stuffed with leaves, pine needles and grass. It will hold in body heat and minimize the effects of wind. In desert areas, it can be used to construct a solar still. In order to make a piece of plastic compact enough to fit in a cigarette case, for instance, you'll have to prick it with a pin to release the trapped air. This won't affect the waterproof quality of the plastic.

MATCHES—Matches are laid with heads alternating, with the second row placed 90° to the first row. Melt wax over the entire stack. The wax makes the matches waterproof and buoyant.

SAFETY PINS—Our old friends. Pack various sizes.

FISH HOOKS—Sizes 10, 12 and 16, plus 20 to 25 feet of 10-pound test line.

KNIFE—A multiple-bladed small knife. Be sure to sharpen and oil it prior to packing. If you carry a survival type knife in your flight suit-knife pocket, be sure to secure it with some nylon cord.

BUTTON COMPASS—Available at toy or sporting goods stores for less than a dollar. The old adage, "You get what you pay for," holds true in this case. Don't spend a fortune, but do buy a good compass. It can be most valuable.

BALLOON or PROPHYLACTIC—Use as a water container.

BOUILLON CUBES—One or two can provide a warm drink that really boosts morale.

SALT—Place in a sealed straw.

METAL LID—If you use a metal container, polish the lid for use as a signal mirror. Punch a small hole in the center of the lid for sighting purposes, then seal it with tape or wax.

Remember, you're the user of the kit, and these are just suggestions. You can add or delete items as necessary.

Air Force Issue—This issue kit is available if you have a medical supply account. Note periodic inspection date.

That's about it. The kits are ready. Are you? Can you use everything you've packed? If the answer is yes, seal it up and stick it in your flightsuit. The value of a personal survival kit is this: When faced with a survival situation, you'll have this potentially life saving equipment with you. But before you can take it with you, you've got to make it. Don't wait! Get started today!

TMF Notes:

After seeing how easy it would be to make a personal survival kit, the intrepid editors of this magazine decided that, indeed, now was the time to make one up! The first thing Sergeant Turner said to do in the article was to make sure everything you were going to put into a personal survival kit was practical. Unfortunately, we had to discard our original thoughts of taking along a two-grill hibachi, double-thermo insulated sleeping bag and our break-down .410 shotgun. We were able, however, to come up with some of the items prescribed in the article, plus some you might not have expected.

The first stop was the neighborhood life support shop. Unfortunately, they weren't able to accommodate us due to a lack of "expendable" items. They did steer us to a local medical supply sergeant who loaned us a sample, off-the-shelf personal minimum survival kit. This stocked item, stock number 6545-00-139-3671, is a sealed, dated plastic container chock full of most of the items mentioned in the article. That's the good news. The bad news is your unit must have a medical supply account number before you can get one of these handy-dandy little packages. If you should be lucky enough to get one, be fully aware that a lot of the items in it are dated and have to be checked for currency on a regular basis.

Our next stop was the BX. Here we found several items needed to make a minimum survival kit, including waterproof matches, water purification tablets and some magic birthday candles.

After finishing up there, we hoofed it to the local drug store where we purchased a plastic cigarette case. One of our more "pack-rat" minded editors also came up with "one or two" other containers suitable for holding the kit items, including a 1960's vintage band-aid tin box.

Since the head wordsmith at *TMF* is a veteran of the Vietnam War, he was able to lend his experience to the preparation of this article and recommended that, yes, carrying a knife was a super idea. Carrying a sharpening stone or a commercially available lightweight sharpener, however, was equally important since a knife cannot hold an edge forever. So, we found a couple of sharpening elements, either of which will do in a pinch.

Other things we were able to find for our kit were a light-weight survival blanket, a small GI signal mirror, a metal match and cotton for some really quick fires

It only takes a few minutes to get most of this material together, and it's nice to remember the old Person Scout's motto: Be Prepared!

Take Pride In Your Knowledge

by Captain Peter T. Bentley, USAFR
97 MAS (Assoc)
McChord AFB, Washington

"You know kid, I've forgotten more about this plane than you'll ever know." What a statement! How many times have you heard this or, for that matter, said it yourself? It is a statement made with pride and alluding to the vast storehouse of knowledge we have accumulated and, at one time, had at our fingertips. Upon closer analysis, however, what we're really saying is although we knew it all once, we can't remember all of it anymore. Maybe "the kid" is really better off.

We all fly with certain individuals who are always right on top of the situation all the time. They just seem to always know what is going on and can handle every contingency and/or emergency with apparent ease. These people are frequently the topic of conversation, as in "that guy really knows his stuff." But why does he know his "stuff" so much better than everyone else? The answer is not because he is smarter than anyone else, or because he has a better memory. The answer is one of self-discipline and motivation.

The reason a crewmember always knows what's happening is because he or she prepares to fly. It really doesn't require hours and hours of concentrated study. The knowledge is there; it just needs to be brought back up to the surface. A little time spent reviewing "the books" before each flight does wonders for the old recall.

We all take pride in our experience and ability. Part of maintaining personal pride and a good self-image is by *not* being embarrassed or caught in a situation where we are forced to show a lack of knowledge or recall. This may be why some people seem hesitant to ask questions or participate in a prebriefing for a local flight. However, when such a discussion or prebriefing begins, and is conducted in a non-judgmental fashion, people are eager to participate and learn the latest material and newest changes. What difference does it make if you have to get the books out in order to keep everything straight? That's why we carry them in the first place!

It's very difficult to keep our data banks (otherwise known as brains) current, especially with the large number of changes that continually emanate from higher headquarters. It's especially difficult for those of us who are part-time warriors, and doubly so when trying to juggle a double set of numbers. (Now, let's see. Was that the rpm limits for the C-141 or the 727?) That's precisely why we must get back up to speed before we go out to fly. That's also why it's so important for instructors to be aware of the current changes so everyone's "data bank" can be "updated."

There's nothing worse for a flight examiner, than to watch someone squirm in his or her seat, struggling to recall something they really know and, worse, the flight examiner knows they know. Yet, the individual just simply can't remember the information. It's a situation which is uncomfortable for everyone and one which can easily be avoided if everyone, both aircrew and instructors, makes the effort to prepare and be prepared.

Even though we (the Air Reserve Forces) are part-timers, we are still professional military people who should be justifiably proud of our knowledge, experience and ability. Let's take time—let's make the extra effort—to get into the books and, more importantly, stay in the books. We owe it to our country, our unit, and most of all, to ourselves!

AWTH's Corner

Editor's Note: We print AWTH reports as they are sent to us by the AWTH monitor at HQ MAC Flight Safety and edit only for clarity and length, or to protect the anonymity of the author. What we publish is the opinion of the submitter *only* and *should not* be considered the official MAC position on a particular issue. Remember, AWTH inputs are printed to make people think about their actions, with the ultimate goal of preventing mishaps.

On a Clear Day...

A breakdown in crew coordination coupled with a misread altimeter almost spelled disaster for a MAC crew recently, according to the submitter of this AWTH input. The crew was on the last leg of their mission, headed for home. The copilot, relatively new to the aircraft, was flying from the left seat while the aircraft commander manned the right seat.

Approaching the homedrome with the weather "clear and a million," the crew was cleared for a tacan approach. Everything was normal until the aircraft neared the minimum descent altitude (MDA). Unfortunately, the left-seater misread his altimeter and continued his descent 400 feet *below* the MDA before recognizing visual cues that seemed "unusual" for a tacan final. The right seater, meanwhile, was busy gazing outside the aircraft, entranced with the view afforded by the beautiful VFR day, and neglected to call either "one hundred above" or "minimums." Luckily, both pilots recognized the improper altitude at about the same time and the right seater quickly advised, "Hey, we're too low!" (The copilot, who completed the AWTH form, later estimated their altitude to be between 150 and 200 feet AGL at this point.) Quickly climbing back up to the MDA, this very fortunate crew completed the rest of the approach and landing without incident. Sightseeing or inattention by any crewmember during a critical phase of flight could have catastrophic consequences and is definitely an Accident Waiting to Happen.

Gust Lock—A Case of Mistaken Identity

An inexperienced copilot was performing duties in the right seat of a CT-39. Running the before-taxi checklist, he reached for the gear emergency handle and pulled it thinking he had released the gust lock. His error was quickly discovered when the AC attempted to turn out of

parking, and the overlooked gust lock was finally positioned correctly. Imagine this crew's surprise, though, when they attempted to raise the gear after takeoff and nothing happened. (Just as advertised by the Dash-One, when the gear emergency handle is pulled, it interrupts the normal gear-up circuitry.) A chagrined copilot and his less-trusting AC then flew the gear-down Sabreliner to a nearby AFB for some needed maintenance. Let's hope they also took a few minutes to discuss the importance of correctly identifying switches or controls *before* activating them.

C.R. TERROR

The Winded Warrior dings a wing

Home, I'm going home, going home from Torrejon," exclaimed C.R., just a hint of a smile crossing his face.

"But Boss," chirped the cheerful as always Sam, "aren't we flying *eastbound*? And don't we have 3 more days to go on this European shuttle?"

Sergeant Ty Downs, listening on interphone, suddenly became wide awake. "Pilot, load. You didn't by any chance talk the 322nd ALD into anything unusual, did you? Like perhaps going home eastbound through Diego Garcia?"

"Terrific idea, load. Glad you thought of it. Why we should try that the next trip. And maybe even a divert into Bangkok for a stop at Andrew's Jewelers." The Rotund One's eyes gleamed with visions of capturing the black star sapphire market.

"But Boss," Sam interrupted, "what about my question?"

"Getting to that, Sammy. As I was about to say...what was I about to say? Ah yes, home is where the heart is, and I lost my heart at Romberg Air Base. That's our next stop right after this leg to Elberta AFS."

Sammy, looking puzzled murmured, "But what about Tassels? Remember Tassels?"

C.R. deftly changed the subject, and ignored the needling of his right-seater, questioned, "Did you say

tacan? No, we're going to fly a PAR to runway 01 at Elberta. Prepare for descent."

Sammy quickly briefed, "Boss, Elberta metro has a wind warning in effect until 2300 local. Winds are forecast 240° variable 270° at 14 knots gusting to 45 knots. Current surface winds are 240° at 18-22 knots with gust 35-38 knots."

"Nonsense, m'lad. They never have such strong winds in Central Europe. Probably just an overanxious forecaster trying to gain some notoriety for his weather detachment," explained C.R. "Of course, it might not be a bad idea to continue on to Romberg. Why, with the winds gusting out of limits, it might even be a *great* idea to fly direct to Romberg."

"That wouldn't have anything to do with your 'home is where the heart is' speech, would it?" questioned his able right-seater.

"Of course not, Sammy m'lad. I would *never* allow my personal desires to interfere with moving the mission. Of course, if they coincide..." C.R. again smiled, with visions of a candlelight dinner in Romberg.

About an hour later, with winds gusting to less than 20 knots, Sammy began the approach into Elberta. The PAR controller-trainee vectored the aircraft on course and requested, "Begin descent now. On course, on glide path, on course, on glide path."

At 1.5 miles out, C.R. exercising his left seat prerogative, pitched in, "I've got it, m'lad. We're going missed approach. This fellow has us high on glide path. And we're a tad high on airspeed. You know how I demand the utmost precision in approaches." Sammy sighed for the fifth time that day.

"Elberta final controller, MAC 794," radioed Sam resignedly, "we're going missed approach. Request a short pattern to a PAR to 01 again."

"Roger, MAC 794. Due to traffic in the pattern, proceed to Werenhull initial approach fix and fly the 10 DME arc to final." The authoritative voice from Elberta RAPCON obviously belonged to the trainee's supervisor.

A few minutes later as the Nonprecise Neophyte abruptly rolled the Starlifter out on final, he applied the finishing touches to his spartan approach briefing. "This will be a left seat full

stop landing, crew. Winds will not be a problem!" explained the Wizard of Wing-Low.

"But, Boss, tower is now reporting a direct cross at 240° variable 270° at 20 knots, gusting to 25 knots," briefed Sergeant Torque, recomputing his TOLD card. "With the gusts, we're right at the limits. If the gusts exceed 25 knots, we'll be out of limits."

"As I always say, Sergeant Torque," C.R. lectured, "no gusts, no glory. And as the song goes, we're going to 'take it, to the limit' one more time." The Magnificent Major, meanwhile, began an idle-power dive to the glide path, predictably overcorrected, and went below the glide path.

The ground proximity warning system aboard the Starlifter, seemingly in tune with the rest of the crew, began its ever familiar, "Whoop! Whoop! Pull up! Whoop! Whoop...!" siren song.

At 2 miles out, the new Elberta final controller reported, "Wind alert. Wind at 270° at 20 knots gusting to 30 knots."

"Boss, let's go around. We're out of limits by 5 knots with the gusts," hinted Sammy, aware of C.R.'s tendency to make the worst out of an already bad situation. "Remember direct Romberg?"

"Disregard, crew, we're gonna land. Engineer, we'll be landing between gusts. It's an old technique I picked up at Lajes whilst flying Globemasters. Works every time," defended the Addled Aviator as he rocked in 10° of left bank to maintain runway alignment.

Unfortunately for C.R., the winds did not diminish. In fact, just at touchdown, a peak gust reached 40 knots.

"Watch your bank, Boss! Watch your bank!" Sammy shouted, fearing for his life.

"I've already got full left aileron, Sammy," replied C.R., mustering his last reserves of strength and watching as the C-141 drifted to the right and the left wing began to rise.

The screech and shudder were unmistakeable. "Gadzooks!" C.R. exclaimed, as his aircraft's uncommanded roll to the right was abruptly halted by the right wing scraping the runway. The noise in the sliding Starlifter became louder as number 4 engine and right wing tip continued to scrape the asphalt, managing to hit an arresting cable in the process.

"Spoilers, get this beastie down. Argh!" C.R. screamed, as the nose and main landing gear touched down simultaneously.

"Tower, MAC 794, your right wing has hit the runway and you're leaking fuel," calmly reported the Elberta tower controller.

Shaken, Max Torque quickly unstrapped from his seat and peered out the right side window. "Boss, we've got fuel coming out of the right wing tip. Better shut down number 4 engine."

"Loadmaster, pilot, prepare your passengers for emergency evacuation," a dazed C.R. managed to croak as he brought the wounded airlifter to a halt.

Quickly shutting down all four engines, the Master Manipulator led his crew in the emergency egress, climbing over Max Torque in the process.

With the fire engines' sirens wailing and red lights flashing, C.R. looked ashen-faced at his right seater. "Must have been the B-model, m'lad. The old A-model would've handled these winds like a champ. Of course! Those wind instruments must have been out of calibration too."

"It could have been, Boss," Sammy answered pensively as they entered the crew bus, "but I don't think so. Anyway, the command post wants you to come inside. And I don't think it's a reroute to Romberg."

C.R., lost in thought, mumbled, "You could be right, Sammy. But they probably want to submit us for the Excellence in Airmanship award for our safe landing and evacuation."

Sam continued, "That's not the impression I got, Boss. But we'll see. We'll have plenty of time to see."

Quick Stoppers

Ocean-Going Huey

A couple of months ago, the crew of a UH-1H supporting water survival training in Florida nearly found themselves in the water with the students. The Huey crew had just completed water pickups and were operating at 20 knots at an altitude of approximately 75 feet when they felt an instantaneous vibration throughout their aircraft. Not inclined to practice swimming with their life preservers, the crew decided to hover taxi approximately 4 miles to shore. They made the short but exciting flight accompanied by another Huey and a survival school support boat, and landed safely on a nearby helipad. The maintenance folks traced the source of the vibration to a failed tail rotor driveshaft hangar bearing.

Hunger Pains

A European buzzard developed a gargantuan appetite recently and decided to kill and consume a C-5A. The gray and white airlifter had just rotated for takeoff when the 1.75 pound common buzzard attacked. Unfortunately for the participants in this assault, the bird overestimated both his appetite and his abilities and was, instead, inhaled by the Galaxy's number 2 engine. The C-5 crew's first indication of the buzzards untimely demise was an excessive vibration, fumes in the cockpit and problems with the number 2 generator. When safely airborne, the crew retarded the number 2 throttle to idle and selected the right air conditioning pack. After declaring their emergency, they made an immediate VFR landing. During the landing roll the scanner reported sparks coming from the damaged engine and the flight crew quickly shut it down. The "indigestion" caused by the deceased buzzard resulted in damage to the fan stators and rotor blades and a hole in the top of the engine cowling. Talk about biting off more than you can chew!

Derelict Engine

During the descent into a European base, the C-9's number 2 engine refused to respond to the aircraft commander's throttle movements. In fact, when the throttle was moved either forward or backward, the engine N1 remained at a constant 82%. Unable to control the stubborn engine, the AC shut it down and landed without further problems. Maintenance investigation revealed the throttle push-pull control cable was disconnected from the power control crank, apparently the result of being improperly lockwired. Although this malfunction caused no injuries or damage, the importance of *operating, maintaining* and *inspecting* aircraft in strict accordance with the tech data is obvious.

Thoroughly Torqued

The CT-39 was climbing through FL 260 when the number 2 engine fuel flow, RPM, and EGT began fluctuating, accompanied by a noticeable roaring and engine vibration. The crew saw the oil pressure indication was zero and, although the oil pressure low light was not illuminated, shut down the affected engine and began an emergency return to their departure base. The number 2 engine seized immediately after being shut down. Following an uneventful single-engine landing, maintenance quickly located the problem. It seems the studs which hold the oil filter cap firmly in place had been overtorqued, stripping them out of the engine housing. This allowed the filter cap to work loose and permitted oil to be pumped overboard. The engine seized due to oil starvation. A failed engine oil pressure sensor prevented the oil pressure low light from illuminating.

Wild Pitch

What was scheduled to be a routine photo support and emergency procedures sortie recently turned very realistic for the crew of a CH-3E. The photo portion of the mission had gone normally and the crew soon landed to deplane the photographer. The pilot in the right seat then lifted the aircraft into a hover and initiated a normal takeoff. As the helicopter started to accelerate through translational lift, it suddenly pitched up approximately 45° nose high, despite the forward cyclic inputs made by the pilot. The instructor pilot immediately took control of the helicopter, managed to level off and made an emergency landing on a parallel taxiway. Safely on the ground, the helicopter was turned over to maintenance personnel who were able to isolate the problem. It appears an "O" ring seal packing on a flight control servo had worn to the point it allowed hydraulic fluid to bypass the seal. This caused an uncommanded movement of the actuator and resulted in the surprise pitch up maneuver.

Hail To The Herk

Sometimes the best laid plans of mice and men go awry, as the old saying goes, and it was no exception for the crew of a C-130 this spring. Prior to leaving a southwestern AFB for their homedrome in the Northeast, the Herk's crew received a standard USAF weather briefing. It called for a wide corridor of relatively good weather along the first part of their route of flight, including one area of forecast few (1-15%) thunderstorms. The remainder of their route briefing called for them to be on top of the weather to their destination. Forecast in hand, the crew departed.

The crew was, however, without a navigator for the mission, so the crew chief operated the APN-59 radar from the navigator's station, with the pilots monitoring the repeater scope. Level at FL 210, the Herk was in and out of clouds and between cloud layers when it suddenly encountered an area of moderate to severe turbulence and heavy rain. The rough ride lasted only moments, though, and the remainder of the flight was uneventful. The crew later reported seeing no significant echos within 30 miles of their position. Imagine their surprise when the postflight inspection revealed extensive hail damage to the C-130's radome, apparently inflicted during their short encounter with the turbulence and heavy rain. After replacing the radome and performing an airframe inspection to check for damage from the severe turbulence, maintenance released the aircraft for flight. Sometimes what you *can't* see *can* hurt you.

Notable Quote

"Who can hope to be safe? Who sufficiently cautious? Guard himself as he may, every moment's an ambush."

—Horace, *Odes*

After Deadlines

BLACKHAWK CREW CREDITED WITH SAVE—Captain George Selix and his 55th ARRS crew, Eglin AFB, have been credited with saving the life of an Air Force wife, the first save by a UH-60 Blackhawk crew since the aircraft entered the active inventory. The save came when the woman entered premature labor at Eglin and had to be moved to more specialized facilities. Captain Selix and his crew then flew the woman to Keesler AFB, the nearest base with special facilities for premature infants. "Medical officials at Scott and Eglin felt an immediate transfer was necessary to save the life of the unborn baby," said Captain Dave Daly of Scott's Air Force Rescue Coordination Center. After immediate medical treatment at Keesler, which also included an appendectomy, the expectant mother should now carry the baby to full term. Information courtesy ARRS/PA.

COMBAT TACTICS SCHOOL OPENS IN SEPTEMBER—MAC will start classes next month at Nellis AFB as its Combat Aircrew Training School, or CATS, gets underway. CATS will focus on threat analysis, force employment, mission planning and mission execution in various threat environments. The three-week ground training school is the first phase of a two-part program to ensure MAC aircrews are properly trained to handle any situation. Crewmembers who attend CATS will then go back to their home units and implement the second phase of the program which is local ground and flight training. The MAC CATS is separate and distinct from the TAC-sponsored Red Flag exercise at Nellis in which MAC aircrews routinely participate.

MAC FLIGHT SAFETY RECORD—MAC recently experienced its longest period without a DOD Class A Flight Mishap. The period began on 1 September 1982 and ended on 28 June 1983. This represented 299 days without a Class A aircraft mishap.

FAA INITIATES MLS ACQUISITION PLAN—The FAA has issued a request for proposals for the first 172 of a planned 1,250 operational microwave landing systems to be installed under the U.S. National Airspace System Plan. The expanded capability of the MLS will substantially increase an airport's operational flexibility by offering a wider range of final approach paths. MLS is also less sensitive to interference by buildings and terrain since its signal is radiated directly into space rather than reflected from a smooth ground plain as is the present ILS. Deliveries of the FAA units are scheduled to begin in 1985, and all 1,250 units are due to be operational by the year 2000.

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Touch 'n' Go

Photo by TSgt Ginny Karp

"Man, Volant Rodeo sure beats Thule in January!"